



Alternative Education Finance Strategies

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Differences in the formulas states use to fund education account for some of the equity issues in education finance. But the implicit pricing of public school access through housing markets plays a much larger role by rationing valuable nonfinancial inputs into schools that are disproportionately attended by children from higher-income households. This paper then considers two broad categories of state finance policies: those that channel funds to traditional local public schools and those that instead channel such funds to parents or school entrepreneurs. Both types of policies can be targeted in various ways to address equity concerns related to financial school inputs, but the latter allows for a greater severing of the link between school access and housing markets and thus opens a way for addressing inequities in nonfinancial input allocations. The paper concludes that state policies should aim at a greater balance between the two types of state aid.

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Education finance policies affect the incentives of a variety of different individuals, which implies that a thorough analysis of trade-offs faced by policymakers must be rooted in an understanding of how individual responses to incentives shape policy outcomes. In this paper, I will consider two broad categories of state finance strategies: traditional strategies based on providing state aid to local public school districts and more recent strategies based on providing aid directly to parents. Understanding the potential impacts of these different strategies must first and foremost be based on a realistic assessment of the economic forces that shape our current mix of public and private school systems. Although the large inequities within the public system in the United States are widely recognized, the underlying root causes are often caricatured as deriving primarily from unequal levels of financing of public schools due to excessive reliance on local sources of funding. I will

argue that, while unequal funding is part of the story, a deeper underlying root cause for the current inequities arises from the fact that public schools—just like private schools—are “priced.” For public schools, such pricing emerges through housing markets that fundamentally limit choice disproportionately for disadvantaged families who, as a result, end up in the worst public schools. The “quasi-public” nature of public schools that emerges from this pricing then implies unequal distributions of *nonfinancial inputs* into public schools—implying that equalization of *financial* resources cannot be expected to result in equalization of educational opportunities.

State finance strategies that are aimed mainly at equalizing financial inputs into public schools are thus limited in the degree to which they can address the root causes of inequities in public school systems. Using a model developed over the past decade and calibrated to real-world data, I will argue that such strategies do not fundamentally

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alter the distribution of nonfinancial inputs, which are rationed by housing markets that produce systematically different levels of nonfinancial inputs in different public school districts and neighborhoods by “bundling” school and housing choices. State finance strategies that aim aid directly at parents have the potential to “unbundle” housing and schooling decisions—thus addressing the root cause of inequities more directly through the introduction of choice for disadvantaged families. Although such strategies unambiguously result in a reduction in residential segregation, the degree to which they produce greater educational opportunities depends on assumptions one makes regarding the nature of private school competition—and the way in which such strategies are targeted and designed. The potential of such strategies to address root causes of current inequities more directly, however, implies that future reforms of state financing of education will likely have to involve a greater balance between strategies that target aid to schools and strategies that target aid to parents. Such reform has the potential to not only help increase educational opportunities but also address some of the fiscal challenges of urban areas in some parts of the United States.

Section 1 begins with an overview of some of the central challenges faced by education finance policymakers, suggesting that close attention to how policy affects the distribution of households across schools is central to sound education policy. Section 2 then provides a conceptual overview of the economic root causes of inequities in public education, drawing in part on previous simulation work to determine the magnitudes of competing effects. In Section 3, I discuss the potential for traditional school finance strategies to narrow inequities within the public system while maintaining incentives for efficient decisionmaking. Section 4 proposes a conceptually different way of thinking about state education finance policy, focusing state aid more directly on parents rather than school districts. Finally, Section 5 concludes with some thoughts on how education finance policy might benefit both schools and cities if the alternative strategies discussed in the previous two sections were applied in a more balanced way.

THE COMPLEXITIES OF EDUCATION FINANCE POLICY

Education policy unfolds within a complex economic environment in which multiple actors make choices that shape the observable outcomes of policy. Some of these actors are *directly* or *intentionally* affected by the incentives contained in the policy and others are only *indirectly* and often *unintentionally* affected. Predicting the outcome of policy changes must therefore involve an analysis of how changing incentives aggregate, moving the economic environment from its pre-intervention equilibrium to a new equilibrium in which all actors do the best they can given their changed circumstances. Much of what makes education policy challenging, then, derives from the multiple channels through which changes in behavior may influence the ultimate outcomes we observe.

Whose Behavior Might Change?

It is natural to think first of those individuals in the economy who are directly affected by changes in education finance policies.

Local governments and school officials (including teachers), for instance, pay close attention to the ways in which higher-level governments structure aid, with increasing empirical evidence suggesting responses to even small changes in policy.¹ Their motivation derives in part from local voter preferences and in part from incentives within local bureaucracies that favor “gaming” the system to maximize revenue.

Local voters may also internalize policy changes, extending greater or less support to local schools depending on incentives contained within school finance formulas. Some voters—in particular, those with children—might pay close attention to how their voting choices affect local public schools, while others might be more concerned about the impact of such changes on local property values. Among the latter, renters face different incentives than homeowners, with homeowners concerned

¹ Various recent empirical papers suggest that school officials respond directly to changing incentives in both financing and accountability rules. See, for instance, Cullen (2003), Cullen and Reback (2002), Figlio and Winicki (forthcoming), Figlio and Getzler (2002), Jacob (2005), and Jacob and Levitt (2003).

about protecting their wealth, which is typically concentrated disproportionately in their housing investments.²

In addition, parents face choices within a local economy—ranging from whether to send children to public or private schools, whether to live in “better” or “worse” school or neighborhood districts within the local economy, and how much effort to put into monitoring local schools and investing in their children’s education at home.³ And children themselves may change their behavior depending on how school policy affects their peer environment and their parents’ level of involvement.⁴

School entrepreneurs, both inside and outside the public system, determine how much effort to invest in employing innovative new strategies and whether or not to set up new private, charter, or magnet schools.⁵ School policy might even impact how land developers and landlords determine where to build new housing and whether to invest in renovating older housing within a local economy—all depending on how school policy affects demand for different types of housing in different areas.

The Need for Non-Price Rationing in School Markets

In equilibrium, all of these actors seek to do the best they can, given what others are doing and how others’ behavior affects their own economic circumstances. In the end, *something* determines which students end up in which school, which teachers teach in which classrooms, what resources teachers and school officials have available to them,

and how this translates to the delivery of school services to different households. This point is far from trivial. In a typical economic market—say, for instance, the car market—the equilibrium rationing mechanism is straightforwardly governed by market prices. Individuals who like expensive cars and have the resources to buy them end up with expensive cars, whereas those who place less value on car services and those whose resources are more limited end up with lower-end car models. As conditions affecting the car market change—for instance, as gasoline prices increase or as governments introduce different forms of environmental regulations—prices adjust as both demand and supply for different car models change. A new equilibrium then emerges with potentially different allocations of cars to individuals—all rationed by the price mechanism.

School policy is challenging in large part because the rationing mechanisms are more subtle than they are in car markets. Public schools are nominally “free” in the sense that no tuition prices govern who has access to such schools. If this were the end of the story, public school quality would have to equalize across all public schools as no parent—regardless of how much or how little she values school quality—would ever choose an inferior school. Public school quality in the real world is not, of course, equal across all schools, which must mean that there exist other non-tuition rationing mechanisms that cause some parents to end up sending their children to bad public schools while others send their children to good public schools. Similarly, teacher salaries are often controlled by rigid salary scales—implying that there must exist non-wage rationing mechanisms that determine where good teachers and bad teachers end up within the public system. In private school markets, more explicit price rationing is possible as private schools set private school tuitions. But such schools might supplement price rationing with other mechanisms, using, for instance, admissions policies to screen applicants.

Similar non-market factors play a role in determining what level of financial resources different schools have available to them. In car markets, the level of investment undertaken by car manufacturers is determined by profit considerations, with

² Recent work on voting in California suggests the importance of property value considerations for homeowners (Brunner, Thayer, and Sonstelie, 2001; Brunner and Sonstelie, 2003). Fischel (2001) provides a broad overview of the connection between home values and local government behavior.

³ The evidence on parental choices about schools is most rooted in a long empirical literature (starting with Oates, 1969) documenting the capitalization of school quality into property values.

⁴ Harris (1998) documents a substantial psychology literature suggesting such peer influences, and Cooley (2005) models such peer-related behavioral changes in an empirical framework.

⁵ Private school markets have demonstrated an ability to respond relatively quickly to changes in economic circumstances, as evidenced (for instance) by the quick emergence of new private schools in California in the late 1970s (Downes and Greenstein, 1996).

manufacturers considering whether additional investments in improving cars will result in more or less profit given what they know about consumer demand. Funding for public schools, on the other hand, is driven by political markets, with voters and interest groups ultimately determining how much is invested where—and with the set of voters determined by decisions made in housing markets. Private schools must operate more like car manufacturers in that they can afford additional investments in schools only to the extent to which parents (or charitable contributors) are willing to pay for such investments.

The Role of Equilibrium Non-Price Rationing

Ultimately, whether governed by market prices or non-price mechanisms, an equilibrium is characterized by supply equaling demand in school markets and housing markets—and by voter preferences being aggregated through some voting mechanism. But the process by which supply becomes equal to demand is crucial for understanding how policy can affect equilibrium outcomes.

I will argue that, in most U.S. contexts, the most important rationing mechanism within the public system is generated by the close link of housing and school markets. Typically, the right to access a particular public school is given to those who reside within politically drawn geographic boundaries that define attendance zones associated with each public school. If I want my child to access public school A, the best way to ensure such access is by purchasing or renting a residence within the attendance zone of that school. Over three decades of empirical work has now conclusively established that housing markets then “price” such access.⁶ Put differently, the “price” of attending a particular public school is incorporated into the cost of housing. Good schools are associated with considerably “inflated” housing prices, while bad schools are associated with “depressed” housing prices. In any given distribution of housing quality across school attendance zones, the housing market substitutes

for a public school tuition market by pricing or “rationing” access to most public schools.

In addition, it is important to recognize that housing quality is not randomly distributed across school attendance zones. Even if that were the case, housing price differences would ration access to schools. But, in addition, the distribution of housing within local economies arises not only from market forces but also from a combination of political factors that govern both the drawing of attendance zone boundaries and zoning regulations that set minimum housing quality in different neighborhoods. As a result, good public schools tend to reside within attendance zones in which there exist disproportionately high levels of high-quality housing; moreover, all housing prices in that zone are higher than prices for equivalent-quality housing in attendance zones with bad public schools. The combination of housing price differentials for equal quality housing *and* differences in housing quality distributions then rations who will attend which school within the public system.

This rationing mechanism is sometimes supplemented by other forms of rationing. Charter and magnet schools, for instance, are often not as explicitly linked to geographic attendance zones—with some form of lottery system or merit-based admissions resolving instances of excess demand. In some “open enrollment” districts, attendance zones grant immediate rights of access to particular schools but parents may apply to attend schools outside their attendance zone conditional on available space within the school of interest. In such instances, commuting costs to schools as well as lottery systems that ration limited space in desirable schools might ration who transfers out of their local attendance zone. And private schools, as already noted, may combine explicit price rationing through tuition policies with other forms of screening mechanisms of applicants.

The labor markets for teachers and other school officials are subject to similar rationing considerations. To the extent to which wage differences across schools are constrained by government or union policies, again *something* else determines where teachers are assigned. Within a large public school district, for instance, good teachers may be compensated not by disproportionately high wages

⁶ This work began with Oates (1969) and is summarized in Epple and Nechyba (2004).

but rather by “better” assignments to schools and classes with fewer challenges.⁷ Even within schools, quality differences between teachers or tracks require some rationing mechanism that allocates students to classrooms.

Implications of Rationing for “Peer Quality” Inputs to School Quality

The reason why the “rationing” mechanism of students into schools and teachers into classrooms is so important is that it has direct implications for the nonfinancial set of inputs into school production that I will broadly call “peer inputs.” By peer inputs, I mean any nonfinancial input that has some correlation to characteristics of households. Peers themselves may affect each other’s educational experience—implying that nonrandom assignment of peers into schools will result in different school qualities even if all financial inputs are identical. Similarly, the nonrandom selection of parents into schools is likely to have an impact on school quality, with some parents providing greater human capital at home and paying systematically more attention to monitoring what happens in schools and disciplining how school resources are used. And teacher assignments are likely to favor children whose parents monitor schools more closely and whose children are viewed as “easier” to educate. The characteristics of households that attend a particular school may therefore shape school quality through multiple channels, and the rationing mechanism used to allocate households to schools determines the quality of nonfinancial inputs.

QUASI-PUBLIC AND PRIVATE SCHOOLS WITHIN A LOCAL ECONOMY

Public schools are often held up as an ideal that delivers equal opportunity to quality education for all children while internalizing important societal goals that would be absent in a private school system. Since access to private schools is priced, it is natural to assume that purely private

school markets would exhibit segregation by economic class (and potentially by race to the extent to which class correlates with race and the extent to which parents have preferences biased against particular racial or ethnic groups). The public school ideal holds out the hope that this can be avoided through publicly funded “free” schools that admit all. Furthermore, schools may perform important functions, such as building respect for diversity that forms the foundation for a more harmoniously functioning political climate when children become voters. However, even parents who care about living in a well-functioning society may discount this role of schools for their particular children in favor of emphasizing the building of marketable human capital that can more directly benefit their children. Private schools, it is argued, therefore do not have sufficient incentive to internalize these larger societal goals, whereas the public school ideal holds out hope that it can, through the political process, accomplish such goals more effectively.

Although it is difficult to quarrel with the public school ideal of equal opportunity for all and an appropriate internalization of societal aims, it is crucial to recognize that the structure of the public system in the United States is in many ways set up much more like a private system; thus, the public system is far from being optimally positioned to implement the public school ideal. It is therefore worthwhile to consider briefly how the public system in the United States might more aptly be characterized as a *quasi-public* system that contains the element of taxpayer financing shared with a public system but also the pricing or rationing mechanism of a private system that does not explicitly aim for the public school ideal.

Quasi-Pricing of Public Schools and Inequities in Public Education

It is no secret that public school quality varies greatly within local economies, with public school quality directly related to the income of parents—and with most states having experienced legal challenges to public school financing systems as a result. Because legal challenges have been based largely on observed per-pupil spending differences, the policy discussion emerging from these court

⁷ See, for instance, Loeb and Page (2000).

cases has focused primarily on the role of local financing of public schools.

It is certainly true that, to the extent to which marginal funding for schools comes from local tax bases, spending inequities across public schools can be linked directly to local funding. It does not follow, however, that local funding of schools is the only—or even the primary—reason for differences in school quality. In fact, a long literature on the role of financial resources in public education has cast doubt on the extent to which such funding differences play a large role in undermining the public school ideal of equal opportunity for all.⁸

A fuller appreciation of the root causes of inequities in public education emerges from a fuller appreciation of the role of quasi-public pricing of schools. Suppose, for instance, schools were in fact equally funded but inputs such as teacher and peer (and parental input) quality play a large role in shaping schools. Teacher-rationing mechanisms are likely to place good teachers in schools with students who have higher socioeconomic status (SES) (i.e., those viewed as “easier” to teach), and parents who have the resources to invest in their children outside school and thus create positive peer characteristics are likely to live in higher-income neighborhoods. Thus, multiple channels exist through which public school quality differences can emerge, even in the absence of funding differences; and these quality differences will be priced in housing markets as discussed in the previous section. Differences in household income will then lead to higher-income households enrolling their children in better public schools through the quasi-pricing in housing markets.

Inequities in public education may therefore arise in part from a history of local financing of public schools, but increasing evidence suggests that it is primarily due to larger economic forces within urban and suburban economies that are tightly linked to differential access to schools and the resulting nonrandom assignments of parents, students, and teachers, which in turn results in unequal levels of nonfinancial inputs. The quasi-pricing of public schools through housing markets implies that the very type of school segregation

feared under a private system is, at least to some degree, present in the quasi-public system.

Private Schools in a Quasi-Public System

We can then think about the role played by private schools in local economies characterized by quasi-public school systems. Recall that such systems lead to substantial distortions of prices in housing markets—with a premium added to housing prices in good school districts beyond housing (and neighborhood) characteristics, and an analogous reduction in housing prices in poor school districts. For private schools, this opens a potential competitive advantage over quasi-public schools since private schools do not ration access by drawing geographical attendance zones. In essence, the distortions of housing prices arising from the quasi-public nature of public schools create incentives for private school entrepreneurs to open schools in areas with depressed housing prices (i.e., in poorer areas) because this will then permit parents to “unbundle” their housing choice from their school quality choice and take advantage of “bargains” in the housing market.

Of course this unbundling is not the only competitive advantage enjoyed by private schools. Private schools may be more “efficient” in the sense of producing more quality per dollar; they may be able to *horizontally differentiate* themselves by offering different pedagogical approaches aimed at particular types of students; and they may be able to “cream skim” good peers from public schools and thus create “high peer quality” schools by rationing entry into the school by means other than tuition policies (Nechyba, 2005). Regardless of which other competitive advantages such schools exploit, however, the quasi-public nature of public schools linked to housing markets creates an incentive for private schools to emerge in lower-income areas—or at least areas where average income is below the average income of private school attendees.

Quasi-Public Schools, Private Schools, and Residential Segregation

While the quasi-pricing of public schools through housing markets therefore introduces a *segregating* force into local economies, the ability

⁸ See, for instance, Hanushek (1999).

Table 1**The Role of Quasi-Public School Pricing in Local Economies**

Private schools allowed	Public school financing	Average district income			Average district property value		
		Low-income district	Middle-income district	High-income district	Low-income district	Middle-income district	High-income district
Yes	None	\$25,700	\$50,175	\$67,325	\$158,327	\$227,189	\$266,474
No	Local property tax	\$17,628	\$39,647	\$85,925	\$101,683	\$204,075	\$392,402
	State income tax	\$19,875	\$42,250	\$81,075	\$102,086	\$220,725	\$387,549
Yes	Local property tax	\$29,725	\$50,262	\$63,212	\$123,224	\$211,729	\$294,825
	State income tax	\$29,891	\$51,309	\$62,000	\$118,486	\$226,345	\$316,308

NOTE: Dollar values are expressed in 1990 dollars.

SOURCE: Nechyba (2003b,d and 2004).

of private schools to de-couple housing from schooling choices introduces a *desegregating* force. This is not to say that such schools will necessarily be, in themselves, more integrated than public schools; rather, even if private schools appeal to a homogeneous clientele and thus segregate certain types of students coming from the quasi-public school system, this nevertheless reduces *residential* segregation and with it the housing price dispersion created by the link of housing to quasi-public schools.

To give some indication of how important the bundling of public schools and housing markets is—and what role private schools might be playing in such an economic environment—I have formulated a general equilibrium model with multiple school districts; a competitive private school market that has the ability to “cream skim” good peers from public schools; and a housing market with (i) different mixes of housing qualities in different districts and (ii) residents/voters that face different economic circumstances.⁹ In Nechyba (2003b), this model is calibrated to New Jersey data on households, housing markets, and public school spending records. With the appropriate New Jersey system of school finance modeled as a baseline, this model successfully replicates important features of the data—such as distributions of income and housing prices

across school districts, observed spending patterns in public schools, and appropriate levels of private school activity.¹⁰ I will repeatedly refer to simulation results from this model (which is also applied in Nechyba, 2003c) and begin in Table 1 by reporting some hypothetical experiments to illustrate the importance of the interaction of private and quasi-public schools.

The first row of Table 1 reports simulation results from the model *in the absence of public schools* and thus with no school-induced housing price distortions. The values in this row are therefore a benchmark for what housing prices and levels of income segregation one would expect simply given the housing (and neighborhood) quality distributions in the New Jersey data. The next two rows of the table then simulate the functioning of a quasi-public school market *in the absence of private schools* under either strictly local or strictly state (equalized) funding. Regardless of how public schools are funded, whether entirely through local tax bases or equally through state funding, the model predicts stark increases in residential income segregation and a substantial increase in the inter-district variance of housing prices. Finally, the last

⁹ This model was first presented in Nechyba (1999), further developed in Nechyba (2000), and presented in a less technical form in Nechyba (2003a).

¹⁰ The base model assumes that private schools, in addition to locational advantages discussed above, seek to select attractive peer groups and thus engage in “cream skimming” of good peers from public schools. Alternative versions of the model include other types of private school advantages with little change in the prediction of how policy affects local economic environments.

two rows of the table introduce private school markets into the quasi-public school environment. Although housing prices across districts still capitalize local public school quality, housing values in poor districts rise as private schools allow residents there to de-couple their housing and schooling choices. More remarkable, however, is the substantial narrowing of residential income segregation resulting from the introduction of a private school market, with less segregation than would exist were there no school-induced price distortions at all (as in row 1). This effect is due to the fact that, given the negative capitalization of poor public schools into housing values, households with children enrolled in private schools (whose income tends to be larger than the average income of the poor districts) have an added incentive to reside in higher-quality housing within the poor district.

After providing this background of how quasi-public and private school markets interact, I am now ready to discuss two conceptually different types of school finance policies. The first, labeled “Strategy 1” in the next section, is aimed at achieving greater funding equity within the quasi-public system through differential aid based on local characteristics. The second, labeled “Strategy 2” in Section 4, instead aims aid directly at parents to increase “choice,” particularly for those households whose choices are limited given the quasi-public school rationing mechanism that is in place.

STRATEGY 1: EQUALIZING PUBLIC SCHOOL RESOURCES

The first broad category of school finance strategies is focused on finding ways of achieving greater equity in terms of per-pupil resources within the quasi-public school sector. Most state policy debates over the past few decades essentially are debates about the effectiveness of different ways of accomplishing such equalization, with attempts to balance local discretion with state equity goals. The distinguishing characteristic of this class of strategies is that it tacitly assumes funding differences lie at the base of observed inequities—and consequently focuses on providing additional financial resources to financially disadvantaged schools.

Within this class of school finance strategies, one can distinguish between a variety of different conceptual approaches. First, state aid may come in the form of *block grants* based on the underlying characteristics of a school district, or it may come in the form of *matching grants* that depend on local tax effort, with the match rate determined by the underlying characteristics of a school district. Second, state finance policies may or may not place limits on the degree to which local districts can supplement state aid through local revenues beyond some predetermined amount. Put differently, a key feature of any combination of state financing strategies is the extent to which *marginal* school funding comes from state versus local sources. Finally, state aid to districts can vary in the degree to which it is targeted to particular characteristics of districts (such as low income).¹¹

I begin with two extreme cases: pure local and pure state funding. Under local financing, each dollar (including the marginal dollar) of spending is derived from local tax bases, whereas under state financing each dollar (including the marginal dollar) comes from a statewide tax. Given that higher-income districts pay more in state taxes, state funding implicitly transfers money from rich to poor districts.

The Limits of Equalization: Pure Local versus Pure State Funding

If per-pupil spending were the only input that mattered in education production, equalization of spending through state funding would eliminate inequities. In the presence of other “peer” inputs into education production, however, equalization of per-pupil spending eliminates inequities only to the extent to which current inequities arise from local and unequal financing. The challenge for predicting the impact of state equalization is then to merge theory and data in a way that permits us to quantify the different channels through which inequities are currently maintained within the public or quasi-public system.

The model first developed in Nechyba (1999) and extended in Nechyba (2000) and Ferreyra

¹¹ See, for instance, Hoxby (2001) for empirical evidence on the importance of these distinctions.

(2005) takes up this challenge by modeling school quality as a function of per-pupil financial resources *and* other factors broadly labeled as “peer effects.” As already noted earlier, by “peer effects” I mean not only the exogenous and endogenous effects peers have on one another in a school or a classroom,¹² but also other nonpriced inputs that are correlated with characteristics of peers. For instance, a student may be considered of “higher peer quality” if she has parents that invest in the public school by monitoring school performance or if she is the type of student who attracts good teachers in a system in which high-quality teachers are assigned to “better” classroom environments.

Within such a model, the structure of the model then has implications for how well private schools can compete with quasi-public schools and how housing prices within a local economy evolve. For now, let us assume that the primary competitive advantage of private schools (aside from permitting an unbundling of school and housing choices) derives from their ability to “select” peer groups. If the school production technology assumed in the model places “too much” weight on per-pupil financial resources, private schools then do not have a sufficient advantage to compete with quasi-public schools and housing markets do not incorporate empirically plausible levels of school capitalization. If, on the other hand, the model places “too much” weight on peer effects, quasi-public schools cannot compete with private schools—leading to an equilibrium dominated by empirically implausible levels of private school attendance.¹³ Thus, the structure of a general theoretical model of quasi-public and private school markets—when matched to important characteristics of the data—can place appropriate weights on the role of per-pupil financial resources and “peer effects.” Such weights may then be interpreted as actual weights in the school production function or as the weights valued by parents as they evaluate school quality.

The empirically relevant versions of a theoretical model of quasi-public and private schools then place substantial weight on both per-pupil resources and peer effects; and, because of the weight on peer effects, equalization of per-pupil resources is limited to the extent that it can produce a substantial narrowing of public school inequities. Table 2 below reports results from such a model that compares the baseline result from the hybrid state/local system in New Jersey to results from the radically different choices of pure local public school financing and equalized state financing, again within a version of the model calibrated to be consistent with data from New Jersey.

The first row of the table illustrates the impact of the school financing formula used in the three sets of simulations: It shows that the per-pupil funding under a purely local system is over twice as high in the wealthy district as in the poor district, with per-pupil funding under the state-financed system fully equalized and the New Jersey hybrid system falling in between the extremes. The second row of the table, however, illustrates much less dramatic effects of school financing on nonfinancial inputs (i.e., peer composition) within quasi-public schools, resulting in a smaller narrowing of overall public school quality achieved through centralization of financing than one would expect from simply per-pupil spending effects. In addition, average per-pupil spending in the system falls under centralized financing for political economy reasons described in the literature predating this work.¹⁴ This implies that, although centralization is predicted to result in a narrowing of inequities within the public system, *average* school quality will suffer under full equalization as fewer financial resources flow into the system.

Private school attendance changes in somewhat subtle ways across the three systems, with the model predicting an overall decline in private school attendance under centralized financing.¹⁵

¹² See Manski (1993) for the distinction between different types of peer effects and an exposition of the econometric difficulties of identifying them independently.

¹³ This result is due to the fact that the model assumes either that private schools can select peers or that such schools have other competitive advantages discussed in more detail in Nechyba (2005).

¹⁴ Sontelle and Silva (1995) illustrate that average spending levels (under majority rule voting) depend approximately on mean state income under local financing and on median state income under state financing. Given the skewed nature of state income distributions (also reflected in the calibrated model on which Table 2 is based), this implies greater average spending under local financing.

¹⁵ This is discussed in detail in Nechyba (2003c).

Table 2**The Limits of Equalization**

	Decentralized system plus N.J. state formula			Decentralized local property tax			Centralized state income tax		
	Low- income district	Middle- income district	High- income district	Low- income district	Middle- income district	High- income district	Low- income district	Middle- income district	High- income district
Per-pupil spending	\$6,652	\$7,910	\$8,621	\$5,000	\$7,326	\$10,215	\$7,195	\$7,195	\$7,195
Peer inputs	0.2684	0.4701	0.6521	0.2613	0.5142	0.6404	0.2826	0.5469	0.6470
School quality	0.4322	0.6178	0.7803	0.3674	0.6192	0.8183	0.4616	0.6316	0.6841
Average spending		\$7,753			\$7,731			\$7,195	
Average quality		0.6152			0.6204			0.5960	
District income	\$31,120	\$46,216	\$65,863	\$29,725	\$50,262	\$63,212	\$29,891	\$51,309	\$62,000
Property values	\$117,412	\$205,629	\$292,484	\$123,224	\$211,729	\$294,825	\$118,486	\$226,345	\$316,308
% Private	20%	22.5%	12.5%	30%	20%	10%	22.5%	17.5%	15%

NOTE: Dollar values are expressed in 1990 dollars.

SOURCE: Nechyba (2004).

Although the subtleties of how private school attendance changes across districts are not central to the purpose of this paper, it is important to note that the prediction that centralization results in a decline in private school attendance is somewhat at odds with the experience in California (which has come closest to fully equalizing per-pupil spending), where private school attendance increased after centralization of public school financing. This suggests that, in the real world (but not in the model), centralization results in additional declines in public school quality that are not captured by the structure of the model used here.

The main point of Table 2, however, is simply that, because school quality is determined only in part by per-pupil *financial* resources, there are limits to what school finance equalization can achieve and trade-offs emerge between average quality and the degree of inequity within the public system. The underlying economic forces that cause persistence of inequities even under full equalization can then be found in the combination of (i) the importance of nonfinancial inputs into education and (ii) the sorting of peers, parents, and teachers that is implied by the quasi-public nature of public school markets linked to local housing markets.

Block Grants with and without Local Funding

Most state finance systems contain elements of local financing supplemented by elements of state financing provided through some form of grant system in which block or “lump sum” grants may play a role. Equalized state financing is an extreme version of a block grant system in which local districts are not permitted to supplement state funds from local revenue sources. Less extreme versions might be differentially targeted to poorer districts and might permit local jurisdictions to supplement state funding through local tax sources.

The theory of block grants suggests that such grants—so long as they permit but do not require additional local financing—have little effect on per-pupil spending unless the block grants are sufficiently large to cause local districts to choose no additional spending. This is because districts can “undo” block grants by reducing their local funding levels. A sufficiently large universal block grant system that provides the same amount per pupil to all districts will then have a differentially large impact in poor districts, whose spending levels would be below the block grant level in the absence

of state financing.¹⁶ The empirical literature on block grants, however, suggests that local political institutions tend to function in such a way that they do not fully “undo” block grants by reducing local tax effort, implying that, although block grants have the greatest marginal impact in districts that would spend below the block grant level in the absence of intervention, such grants will have a significant positive impact on local spending even in districts where this is not the case.¹⁷

So long as block grants can be supplemented through local funds, it is unlikely that block grant systems can result in a greater narrowing of public school quality than could be achieved by full state equalization (which is equivalent to an equalized block grant system without allowing localities to supplement state funding). Consider, for instance, the equalized state system in Table 2, a system in which the state provides a \$7,195 per-pupil block grant to all quasi-public schools but prohibits additional marginal funding from local sources. Then suppose that that state maintains the block grant program but permits additional local funding. If the state can indeed maintain the same per-pupil block grant level, residents in the wealthiest district would choose to raise per-pupil funding by over \$2,000 but no district would lower its funding. Given relatively little change in peer quality under the two systems, this implies that school quality rises in the wealthier districts but does not fall in poorer districts when local funding is permitted to supplement state funding. Therefore, overall public school quality rises without quality falling in any districts. To the extent to which the state’s goal is to guarantee “adequacy” rather than “equity” of funding, this would suggest that permitting local jurisdictions to supplement state financing may be attractive.

However, the conclusion that it is desirable to allow local jurisdictions to supplement state funding may fail to hold if political forces can influence the level of the per-pupil block grant. If local tax sources cannot be used to finance local schools, then parents in high-income districts have an incen-

tive to vote for large block grants even though only a portion of their own tax payments will remain in their district. However, parents in wealthier districts would prefer to supplement the state block grants their district receives with local taxes, which would remain entirely within their local schools; the less attractive option for them would be to vote for high block grants funded by statewide taxes that are paid disproportionately by the wealthy. Thus, the political equilibrium changes when local jurisdictions are permitted to supplement state funds—with less support for block grants from those who have the high demand for public school spending. Consequently, public school spending in poor schools may erode when a policy of permitting local districts to supplement state funding is introduced into the state-equalized model shown in Table 2.

I am unaware of any serious modeling of this trade-off and can therefore offer only a conjecture about the degree to which political forces might undermine a block grant system when local jurisdictions are able to supplement state funding. In states with sufficiently strong judicial mandates for adequacy, such mandates impose a constraint on the degree to which higher-income households can vote to reduce block grants to rely more on local sources of revenues. When such mandates are sufficiently strong, one would expect that block grant systems would be maintained even as local supplements to state funding are permitted. To the extent that such mandates are not sufficiently strong, however, one might be concerned about allowing local jurisdictions to supplement state aid.

Matching Grants and District Power Equalization

Many state finance formulas have features that can be modeled as matching grants—grants that match local tax efforts in some relation to local economic conditions. Unlike block grants, matching grants affect per-pupil spending by reducing the *tax price* faced by local voters, giving rise to what economists refer to as powerful substitution effects that induce voters to make fundamentally different trade-offs—substituting away from other (private and public) spending and toward school spending. *District power equalization* represents a system of

¹⁶ Detailed simulation results are reported in Nechyba (2003c, 2004).

¹⁷ For an introduction to the literature on the “flypaper” effect, see Hines and Thaler (1995).

matching grants that sets matching rates in inverse proportion to local tax bases, giving larger tax price subsidies to poorer districts.

If matching grants are unrestricted, in the sense that there is no ceiling at which the match disappears, local jurisdictions will raise spending until the marginal value of an additional dollar of spending is equal to the amount that needs to be raised locally in order to generate a dollar of spending. Put differently, the marginal value of spending on schools will necessarily fall below the marginal cost. This raises clear efficiency concerns in light of the fact that efficient spending requires that the marginal cost and benefit of spending are equal to one another. As a result, unrestricted matching grants result in inefficiently high levels of spending unless there are externalities from spending on schools that are not taken into account by local voters and governments.¹⁸ In the absence of such externalities, this suggests that matching rates ought to be zero *on the margin*.

This is not, however, an argument against matching grants—only against *unrestricted* matching grants. Programs like district power equalization are motivated primarily by equity concerns that arise from the fact that local tax bases in quasi-public school systems differ dramatically and that equity or adequacy considerations can be addressed by essentially supplementing local tax efforts in poorer districts with state matches. Put differently, *equity* concerns may trump *efficiency* concerns in the design of matching aid.

A second consideration arises from the impact the grants themselves have on property values. An extreme version of district power equalization, for instance, might impose positive match rates in poorer districts and negative match rates in richer districts. In essence, such a system taxes local tax effort in districts with high tax bases and subsidizes local tax effort in districts with low tax bases. This will, however, necessarily imply that property values (and thus tax bases) in poor districts rise while property values (and thus tax bases) in richer districts fall. As a result, the potential exists for such extreme forms of district power equalization

to result in a convergence of property values that will in part unravel the intent of subsidizing spending in poor districts and taxing it in rich districts. The local public finance literature has not settled on a consistent view on how important this “unraveling” effect is; models such as the one used to generate simulations in our previous tables suggest modest effects, and some empirical evidence from actual district power equalization programs suggest much larger effects.¹⁹

The price effects from matching grants (combined with effects on property values) also have underappreciated implications for how much district power equalization is necessary to equalize spending across districts. It might seem initially intuitive, for instance, that a district power equalization program aimed at equalizing per-pupil spending should set matching rates in such a way as to allow every district to achieve the same level of spending with the same local tax rate. Such a program could in principle involve positive matching rates for poor districts and negative matching rates for rich districts, or it could involve positive matching rates for all districts, with disproportionately higher matches for poorer districts. In the former case, the district power equalization program can be revenue neutral by simply transferring from rich to poor districts, whereas in the latter case the program would have to be supplemented from general state revenue sources.

The intuition that such a system might lead to equality of per-pupil spending is, however, fundamentally flawed. Although the same local tax rate would result in the same level of spending, voters with similar tastes will implement very different tax rates in different districts because of the tax price incentives of the system. Empirically based simulations suggest that full district power equalization would in fact result in an inverse relationship of spending and community income, with the potential of large defections to private schools in rich districts.²⁰ Thus, state finance policies using

¹⁸ Such “externalities” would have to be of the type that creates spillover benefits across jurisdictions. These are treated in more detail in Epplé and Nechyba (2004).

¹⁹ This was suggested in simulations by Inman and Rubinfeld (1979), and Hoxby and Kuziemko (2004) provide evidence related to Texas district power equalization. Nechyba (1996, 2004) suggests that, when housing markets are sufficiently settled, the effect might be small in magnitude.

²⁰ See, for instance, Feldstein (1975) and Nechyba (1996).

matching grants to try to achieve equality of spending across districts require substantially less dramatic district power equalization than our initial intuition might suggest.

Desirable Features of State Finance Policies Aimed at Greater Interdistrict Adequacy or Equity

Our discussion of state finance approaches began by distinguishing three key features of such approaches: (i) the mix of block versus matching grant features of the approach, (ii) the degree to which marginal spending derives from local sources, and (iii) the degree to which block or matching features of the system are targeted to underlying characteristics of local districts (such as local tax bases). Pure (equalized) state financing can be viewed as an extreme form of an equalized block grant that sets the local tax price for additional spending at infinity. Foundation aid systems based on block grants are less extreme in that they provide differential per-pupil block grants while (usually) permitting local jurisdictions to supplement funding from local tax sources, thus setting the marginal tax price to 1. District power equalization systems, on the other hand, rely on matching grants that, if unrestricted, set marginal local tax prices above or below 1 depending on whether matching rates for particular districts are positive or negative.

Efficiency considerations imply that marginal local tax prices (in the absence of certain types of externalities) should be set to 1. Put differently, in the absence of externalities, funding for schools should come from local sources *at the margin* to provide the right incentives for local voters and governments to ensure that the marginal value from additional spending is equal to its marginal cost. This implies that equalized state financing as well as unrestricted matching aid formulas are inherently inefficient in the absence of externalities that cross district boundaries.

Equity or adequacy considerations, however, imply that some form of state aid is necessary to ensure less variance in per-pupil spending. Block grant programs can achieve this by setting a minimum (“adequate”) level of per-pupil spending that is funded from state sources while permitting local jurisdictions to spend more from local sources at a

local tax price of 1. Matching grant programs can also accomplish this so long as match rates are zero at the margin. The price incentives of matching grants furthermore imply that, for any level of state expenditures, matching grant programs will induce greater levels of spending than block grant programs. Although the extent to which state aid programs affect local property values in ways that undermine the goals of adequacy or equity is still in question, it is important that capitalization of such policies into local property values become part of the general discussion of state aid programs in education. Finally, as suggested by our discussion of Table 2, it appears unlikely that state aid in any form will have substantial impacts on nonfinancial inputs into schools—causing little change in the “peer quality” input that is associated with non-random sorting of households into districts.

STRATEGY 2: “UNBUNDLING” THROUGH CHOICE

As discussed in the previous section, the typical state strategy for addressing adequacy or equity concerns in education is one that focuses on different ways of providing state aid to quasi-public school districts. Such strategies can be effective, as I have argued, at managing per-pupil spending in local districts in ways that can help substantially reduce the variance of per-pupil spending across districts. Table 2, however, suggests that such policies, even when fully equalizing per-pupil spending, encounter insurmountable difficulties in equalizing educational opportunities because of nonrandom sorting of nonfinancial inputs. And, as argued in Section 2, these difficulties are rooted in the quasi-public nature of schools combined with the importance of nonfinancial inputs into education (which I have broadly labeled “peer effects”). Put differently, the underlying economic forces within local economies and housing markets combined with the nature of education production necessarily result in unequal quasi-public schools that limit opportunities for children from poorer households.

One possible response to this is to move state finance systems beyond the goal of equalization of per-pupil spending and to explicitly recognize in

state aid programs that equality of opportunity in the public school system necessitates per-pupil spending levels that are *inversely* related to local income.²¹ Although such an approach might indeed result in a narrowing of school *quality* beyond what is predicted from equalization, it is doubtful that such a system would ever be politically feasible and stable or that higher-income parents would not defect in large numbers to private schools under such a system.

A second response to the limits of equalization is to fundamentally re-conceptualize the nature of state aid from a model that targets aid to districts to one that targets aid to parents. The logic behind such a re-conceptualization arises directly from the quasi-public nature of public schools and the economic forces that inherently limit access to educational opportunities along income lines. As argued in Section 2, access to public schools is not “free” but is priced through housing markets and shaped by historically and politically driven attendance zones across housing markets. Higher-income parents have their “choice” of public schools due to their ability to afford housing in all attendance zones, whereas lower-income parents have a substantially narrower choice set. Similarly, higher-income parents have access to private school markets that is much more limited for lower-income parents, especially those judged as “low peer quality” by private schools. At a fundamental level, state aid to districts does not address the restriction of choice imposed on poorer parents—and thus does not address the root economic cause of inequities in quasi-public systems.

This section will therefore explore the impact of introducing choice, particularly for lower-income parents, into a system that has fundamentally restricted such choice. In principle, aid can be channeled to parents in ways analogous to how it can be channeled to districts—in “block grants” through vouchers or tax credits, in “matching aid” through vouchers that require parental contributions (in terms of time or money), or through tax deductibility of private school tuition—in ways

that permit parents to supplement spending on the margin or ways that prohibit such supplemental spending and restrict schools to accept the voucher as payment for tuition. The fundamental difference in this section is that I consider state aid to parents rather than to school districts.

The “Unbundling” Effect of Aid to Parents: Targeting to Households versus Targeting to Communities under Private School Cream Skimming

Our discussion of Table 1 has already suggested the potentially powerful (residentially) desegregating forces introduced by the existence of private school markets in quasi-public school economies. The quasi-pricing of public schools, which depresses housing values in poor districts while inflating them in rich districts, provides dramatic incentives for households at the margin that enroll their children in private schools to locate in relatively poorer school districts. The introduction of aid to parents in the form of private school vouchers (or other types of choice programs that unbundle residential and school decisions) then simply enlarges the already desegregating impact of private schools.

Employing the same computational model (calibrated to New Jersey) as in the previous tables, Table 3 then illustrates the predicted impact of three different types of vouchers. In each case, let us assume that parents are permitted to add to the voucher amount as they pay private school tuition, and the voucher is given as a “block grant” to parents who use it to send their children to private schools. The first third of the table assumes that everyone is eligible for the voucher; the second assumes that the voucher is restricted to those residing in the poor district; and the third part of the table assumes the voucher is restricted to poor households (earning less than \$25,000 per year).²²

First, note that in the top portion of the table, vouchers are used primarily in the poor district for modest voucher amounts. Approximately one-third of the predicted effect arises from parents who resided in the poor district prior to the intro-

²¹ The fact that equalization addresses primarily issues of fiscal capacity but not those of fiscal need (which arises from the lower level of nonfinancial inputs in disadvantaged communities) has been understood for some time; see, for instance, Ladd (1976).

²² For greater detail on the assumptions behind results in Table 3, see Nechyba (2003c, 2004).

Table 3**Vouchers (under N.J. system) with Private School “Cream Skimming”**

Voucher amount	Percent in private schools			Average state spending	Ratio of District 3 to District 1 spending	Average public school quality	Ratio of District 3 to District 1 quality	Net cost of voucher
	Low-income district	Middle-income district	High-income district					
Universal voucher eligibility								
\$0	20%	22.5%	12.5%	\$7,753	1.296	0.6153	1.805	\$0
\$1,000	32.5%	22.5%	15%	\$7,725	1.207	0.6035	1.767	−\$175
\$2,500	40%	27.5%	22.5%	\$7,502	1.150	0.5645	1.716	−\$330
\$4,000	67.5%	40%	30%	\$6,914	1.556	0.4773	2.339	−\$753
\$5,000	100%	82.5%	32.5%	\$7,385	—	0.4220	—	−\$656
Eligibility restricted to District 1 residents								
\$0	20%	22.5%	12.5%	\$7,753	1.296	0.6153	1.805	\$0
\$1,000	35%	22.5%	12.5%	\$7,869	1.226	0.5971	1.698	−\$182
\$2,500	47.5%	30%	15%	\$7,695	1.197	0.5534	1.616	−\$614
\$4,000	82.5%	42.5%	15%	\$7,408	1.623	0.5019	2.460	−\$1,280
\$5,000	100%	47.5%	17.5%	\$7,430	—	0.5093	—	−\$1,321
Eligibility restricted to low-income households								
\$0	20%	22.5%	12.5%	\$7,753	1.296	0.6153	1.805	\$0
\$1,000	20%	22.5%	12.5%	\$7,753	1.296	0.6153	1.805	\$0
\$2,500	20%	22.5%	12.5%	\$7,753	1.296	0.6153	1.805	\$0
\$4,000	40%	22.5%	12.5%	\$7,899	1.264	0.6089	2.046	−\$140
\$5,000	67.5%	20%	10%	\$7,698	1.710	0.6121	2.783	−\$427

NOTE: Dollar values are expressed in 1990 dollars.

SOURCE: Nechyba (2003c, 2004).

duction of the voucher, whereas two-thirds of the effect is due to marginal households from the middle- and high-income district relocating to the better houses in the poor district to qualify for the voucher. Average spending in public schools declines somewhat but, for modest levels of the voucher, the ratio of spending in the rich district to the poor district also declines (as resources in the poor district’s public school are spread across fewer students while local tax bases increase). As the voucher amount increases and the local political equilibrium “tips,” however, this ratio increases because political support for public schools in the poor district declines. When the voucher rises to \$5,000 per pupil (in 1990 dollars), public schools in the poor district cease to exist.

Because the assumption in this table is that private schools engage in an extreme form of “cream skimming” the best students and parents from the public system, public school quality necessarily declines, although for modest voucher levels it declines more in wealthier districts than in the poor district (because the voucher is disproportionately used by parents from wealthier districts). The final column then calculates the per-family tax cost of publicly funded education, the sum of what is spent in public schools and the cost of the voucher system. Because parents are permitted to “top off” the voucher, their actual cost is higher even as the publicly incurred cost declines.

Next, consider the middle portion of the table in which voucher eligibility is restricted to only

those households that reside in the poorest district. Migration into the poor district by middle-income households now increases, causing “take-up” rates in the poor district to rise faster than in the top portion of the table. Because private schools attract clients mainly from this pool of new residents in the poor district, public schools in the other districts are affected primarily by the exit of high-quality peers, with overall spending in public schools changing less. Still, it is striking how similar the predicted effects from a universally available voucher (in the top portion of the table) are to those from a voucher targeted solely at the poor district (in the middle portion of the table). The reason for this is that, even when vouchers are universally available, those who take up the voucher have a strong incentive to move to housing in the poor district.

Finally, the lowest portion of the table considers targeting to low-income families as opposed to targeting to low-income districts. The predicted impact of such targeting differs dramatically because it does not give rise to the residential mobility effects that arise in the first two portions of the table. Targeting to low-income parents thus requires considerably higher voucher amounts for the voucher to affect the system in a significant way.

The Importance of Assumptions about Private Schools

So far, we have assumed that the primary competitive advantage of private schools derives from their ability to select students and thus isolate peer groups. This necessarily implies that public school quality *must* decline as private school markets are fostered through voucher policies, thus giving us the bleakest picture regarding the potential impact of such policies on public schools. The evidence on the extent to which private schools rely on this “cream skimming” advantage as their sole tool for attracting parents is, however, relatively weak. I therefore consider two alternative assumptions about private schools to highlight the potential for more positive impacts of competition on public schools.

Table 4 reports the impact of different levels of private school vouchers on public school quality in each of our three districts, with quality indexed by 100 for the middle-income district in the absence of vouchers. The top portion of the table continues

with the assumption of “cream skimming” as the primary tool used by private schools to compete against public schools (as in Table 3), illustrating once again the drop in public school quality in all districts as universally available vouchers are introduced. Note again that public school quality declines in all districts even as private schools appear primarily in the poor district—because private schools are “skimming the cream” from all public schools, not just those in the poor district.

The second and third parts of Table 4 then introduce two alternative assumptions about private schools. In the middle portion of the table, I assume that children with different “abilities” can be served better if pedagogical approaches can be tailored to their needs to the extent to which they are in classrooms with similar peers. Although private schools are still assumed to engage in *some* cream skimming, they also aim to fill market niches by offering different types of pedagogical approaches most suited to the needs of particular types of children.²³ Children that remain in the public schools then exhibit less variance in their characteristics, permitting public schools to also target their approaches more directly to student needs. The main conclusion from this exercise is that, as less deleterious motives for private schools are introduced together with an ability by public schools to become more effective under competition, the introduction of vouchers *can* lead to increases in public school quality in all districts.

The final portion of the table illustrates a similar conclusion from introducing yet a third private school advantage supported by some empirical evidence. Again, let us continue to assume that *some* of the private school advantage derives from cream skimming; however, private schools are also assumed to be more efficient at translating financial resources into school quality, whereas public schools become more efficient only when exposed to competition.²⁴ And, as in the middle portion of

²³ The simulations assume that approximately half of the private school advantage still derives from “cream skimming” and half derives from pedagogical targeting.

²⁴ The pedagogical targeting in the middle portion of the table can in fact be viewed as a special case of resource efficiency—with private schools being able to produce more quality with a given set of financial resources because they can target their curriculum to a narrower range of student types.

Table 4**Impact of (Universal Vouchers) Under Alternative Private School Assumptions**

	Voucher amount				
	\$0	\$1,000	\$2,500	\$4,000	\$5,000
Public school quality*					
Cream skimming only					
Poor district	69.97	68.05	65.82	39.83	†
Middle district	100.00	98.80	89.43	78.93	44.59
Wealthy district	126.31	120.22	112.96	93.19	80.27
Cream skimming + pedagogical targeting					
Poor district	70.36	76.46	80.55	81.61	76.85
Middle district	100.00	101.52	104.96	105.99	101.55
Wealthy district	131.05	130.11	129.67	131.74	127.02
Cream skimming + competitive resource efficiency					
Poor district	65.72	67.42	69.81	71.08	71.74
Middle district	100.00	101.83	104.90	107.68	109.75
Wealthy district	124.64	126.96	128.23	131.24	132.59

NOTE: Dollar values are expressed in 1990 dollars. *Indexed to be equal to 100 in middle-income districts in the absence of vouchers.

†Public school ceased to exist.

SOURCE: Nechyba (2005).

the table, the simulations suggest that it is *possible* for public schools to improve in all districts under assumptions about private schools that are more favorable for such effects emerging.²⁵

The Robustness of Unbundling to Different Assumptions about Private Schools

Although the predicted impact of private school competition on public school quality therefore depends on the nature of private school competition (as illustrated in Table 4), the residential desegregation predicted by the model under greater private school activity is independent of what form private school competition takes. Put differently, under each of the scenarios considered in Table 4, the interdistrict variance of community income and housing prices narrows as private school-attending parents disproportionately choose to reside in

poorer districts as they take up vouchers and unbundle their school choice from their residential location choice.

Implications for Voucher Design

As suggested at the beginning of this section, state aid targeted to parents can, in principle, take different forms analogous to the forms state aid can take when targeted to districts. Thus, vouchers can in principle have “block grant” features (as in the tables reported above) or “matching grant” features (which would attract greater private resources into education due to the additional “price effect” discussed in Section 3). Vouchers, like aid to districts, can be designed to limit additional parent contribution by requiring that private schools accept vouchers as full payment for tuition, or they can (as in the tables above) permit households to “top off” vouchers. And vouchers can be targeted to households based on where they live (analogous to targeting state aid differentially to districts) and to household characteristics (analogous to making

²⁵ See Nechyba (2005) for more discussion of the assumptions that lead to better or worse public school performance.

state aid to districts dependent on the mix of household types in each district).

The main difference between state aid to districts and state aid to parents, however, is the inter-district and interschool mobility of aid under the latter system but not the former. When state aid to districts is dependent on the characteristics of households in each district (as when students with low SES or learning disabilities imply greater aid to the district), a household has an incentive to take into account the impact its residential location choice has on local schools because the money that accompanies the household is spread across all students in the public schools of the district. When such aid is provided directly to parents, however, the household is in control of the aid and can use it at whatever school it chooses, thus introducing the unbundling effect emphasized here.

Although this unbundling addresses the central limitations imposed on poorer households in quasi-public school economies, it also gives rise to a number of possible concerns. For instance, if diversity of student populations has important long-run social effects, for instance, will policies that foster greater segregation of student types into different schools create future social problems (even if such policies simultaneously foster greater residential desegregation)? Or, given that some parents are less likely to be engaged in their children's educational progress, will fostering greater choice lead some public schools to be composed almost entirely of students from relatively dysfunctional families? Would segregation of student types into more specialized schools improve quality through educational innovations targeted at the particular needs of different types of children, or will the segregation result in low-peer-quality students having even less educational opportunity than they do under the current quasi-public system?

Our discussion of the potential for unbundling of school and residential choices as a means to offer choice to those most disenfranchised in a quasi-public school system is not meant to minimize these concerns. Instead, our discussion of the quasi-public nature of public schools that bundle residential and school choices suggests that such concerns about the potential adverse effects of increasing choice should raise similar concerns

about public schools as they are presently designed—because their quasi-public character already implies a lack of diversity and a disproportionate concentration of children from more dysfunctional family backgrounds. The potential of private school choice to lessen *residential* segregation offers the possibility of greater integration within communities even as it suggests the possibility of greater segregation in schools. As illustrated in Table 4, greater segregation of student types can have positive or negative effects depending on the nature of private school competition and public school responses. Vouchers can, however, in principle be designed to address concerns about diversity by requiring such diversity in private schools that accept vouchers and by varying voucher amounts based on household and child characteristics.²⁶ And the introduction of greater private school choice for poorer parents must certainly be accompanied by a concerted effort to improve public schooling for those—particularly those in poor districts—whose parents do not exercise choice.

CONCLUSION: THINKING ABOUT CITIES AND SCHOOLS TOGETHER

It is well recognized that educational opportunities for children are currently quite dependent on the economic circumstances of parents. This paper argues that the economic root cause for this fact lies in the quasi-public nature of public education in most of the United States. Public schools are “public” in the sense that they are funded through taxpayer contributions; they are “quasi-public” in the sense that, while nominally “free,” access is implicitly priced through housing markets, thus limiting educational opportunities for poorer households whose choice of public school is typically limited to the worst schools in the public system. As a result, the public system whose ideal is equal opportunity for all children is one that disproportionately concentrates poorer households in worse schools. Furthermore, goals such as exposing children to diversity within public schools are, to the extent that they are realized, far

²⁶ Nechyba (2005) discusses implications for voucher design in more detail.

from the ideal often envisioned by public school proponents.

The inequities inherent in public education in the United States have been well recognized for decades, with increasing state efforts (often motivated by court challenges) to use state aid programs to reduce these inequities. The discussion in this paper suggests that, although state equalization programs can indeed ameliorate inequities to some extent, the quasi-public nature of schools combined with the importance of nonfinancial inputs into school production implies severe limits to how far such policies can go in achieving their aim of providing equal or even adequate educational opportunities for all. Although it is possible to distinguish between different types of traditional state aid programs in terms of their effectiveness at achieving greater equity, some important economic causes of existing inequities—rooted in residential segregation by income—remain intact.

Over the past decade, an alternative set of fiscal approaches has therefore emerged.²⁷ These can be broadly characterized as “choice-based” approaches that include both the introduction of greater choice within the public system and the introduction of greater incentives for private school formation through voucher policies. These approaches are aimed more directly at the economic root cause of inequities in public education, recognizing more explicitly the relative lack of school choice for disadvantaged families. The rise of charter schools, which permit parents to form publicly funded schools aside from traditional residence-based schools, is one such approach, whereas the emergence of publicly funded (private school) voucher programs is another. There is much we do not currently know about the potential systemic effects of such programs, as illustrated by our discussion of the very different predictions regarding the impact of such programs on traditional public school quality, depending on assumptions about the nature of school competition (Table 4). At the same time, economic models suggest that the unbundling of school and housing choices permitted under these approaches is likely to have pro-

found impacts on residential segregation.

Our discussion of the differences between district-based and parent-based education finance strategies highlights the importance of more explicitly recognizing the connection between how cities evolve and the educational opportunities they offer. In a public system in which access to public schools is residence-based, it is not possible to divorce the analysis of school finance policies from an understanding of how city and suburban neighborhoods are shaped. As was demonstrated in Section 3, achieving equality in school spending is far from achieving equality in educational opportunities when households are not randomly assigned to residential neighborhoods. Although state aid to traditional public schools, particularly those serving disadvantaged families, is surely an important aspect for any state effort to ensure greater educational opportunity for all, the fundamental economic forces that maintain inequities within traditional public schools require state fiscal policies to pay increasing attention to those economic forces. Thus, combining traditional state aid programs with parent-focused aid that increases choice for the disadvantaged can become an increasingly important component of state aid strategies, with the aim of increasing educational opportunities while addressing at the same time some of the economic challenges faced by cities (and suburbs) whose populations are too segregated along income lines.

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²⁷ In addition to “fiscal” approaches, there has also been an increased emphasis on accountability systems that lie beyond the scope of this paper.

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